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10/697,528	10/30/2003	Robert P. Sullivan	390-011338-US(PAR)	8147
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EXAMINER				
FOX, CHARLES A				
ART UNIT		PAPER NUMBER		
3652				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATDOCTC@fr.com

Office Action Summary

Application No.

10/697,528

Applicant(s)

SULLIVAN ET AL.

Examiner

Charles A. Fox

Art Unit

3652

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 December 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 12-47 is/are rejected.
- 7) ☒ Claim(s) 11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 12 July 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-06)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the two axes movement of the carrier as in claim 21 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered. Details showing the junction of the track sections forming the two axis junction and a cassette shown before the junction and after the junction should be shown.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 47 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear what structure is added to configure the two transport parts at different speeds. Clarification of this structure is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claim 44 is rejected under 35 U.S.C. 102(a) as being anticipated by Bonora et al. Bonora et al. US 6,494,308 discloses a material handling system capable of handling a container with at least one wafer therein in a controlled environment to a processing device, said device comprising:

a conveyor transport section (10) including a drive track (12);

track elements (42) interfacing with a wafer container (8) for driving the container along said tracks;

wherein the track sections are modular with predetermined lengths and adapted to be joined together in a removable manner to form an extended track;

wherein each module has at least one of the track elements thereon.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1,15-18-20,34-42 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonora et al. in view of Lin et al and further in view of Mizokawa et al. Regarding claims 1,17,18-20,34 and 36- 42 Bonora et al. US 6,494,308 teaches a wafer process system comprising:

at least one processing tool for processing semiconductor wafers;

a container (8) for holding at least one wafer therein for transport to and from the processing tool;

a transport section (10) for connecting the processing tool with other devices within a fabrication facility;

the transport section is not vehicle based and has tracks (12,14) which directly interface with the container for movably supporting the container, and allowing the container to move relative to the various devices in the facility;

wherein the tracks have a motor (48) therein for aligning the container with various track sections and devices in the facility;

wherein said motor is capable of bidirectional movement of one container at the same time along a common section of the track;

wherein the container may be stopped at any predetermined location for access from the overhead lift;

wherein the layout of the system can be made to fit any location depending on the number of process devices as well as building layout. Bonora et al. do not teach an exact structure of the overhead transport system being used in their facility or bidirectional movement of containers along a common track section. Lin et al. US 2003/0198540 teaches a wafer processing facility comprising:

- at least two stocking devices (30) each with an input/output of port;

- a first overhead transport system for moving wafer containers (44) about the facility via a track(38) with a motorized carriage (36);

- a second transport system (52) for moving containers between the stockers;

wherein the two transport sections are parallel at variable portions of their runs such that the two transport systems can be aligned by moving only one of said systems when the container is located at one of said variable locations. Lin et al. does not teach the opposite movement of two containers along a common track at the same time. Mizokawa et al. US 6,863,485 teaches a first tracked section (11) for moving wafers therealong;

- said tracked section serving a plurality of process devices for processing wafers;

- said track comprising:

 - a rail (11a) for guiding a wafer carrier (13) therealong;

 - said carrier being driven by a solid state brushless linear motor comprising:

 - a drive coil (41) mounted to said track;

at least one permanent magnet (42) conventionally mounted to said wafer carrier;

such that energizing said coil will move said carrier bidirectionally along said track;

wherein said track has a single motor that is capable of driving two containers along a track section in opposite directions substantially simultaneously.

It would have been obvious to one of ordinary skill in the art, at the time of invention to provide the device taught by Bonora et al. with the overhead transport as taught by Lin et al. in order to allow two types of transport to service each device in the fabrication plant without interfering with each other while maintaining a cooperative arrangement such that bottle necks can be more readily avoided in the facility, thereby increasing throughput of the system and to further provide the linear motor on the conveying section to reduce unwanted wear debris in the clean area.

Regarding claims 15 and 16 Bonora et al. further teach the transport system as having at least one shunt portion that can acts as a buffer for the containers on the track.

Regarding claim 35 Bonora et al. further teach that the track has intermediate portions remote from end portions of the track.

Regarding claim 41 Bonora et al. also teach the conveyor tacks as having intermediate portions with connections adapted to be joined together to form an adaptable overall transport system.

Regarding claims 42 Bonora et al. further teach a plurality of sensors (52) for sensing the position of a plurality of containers as they move along the conveyor.

Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bonora et al., Lin et al. and Mizokawa et al. as applied to claim 42 above, and further in view of Studer. Bonora et al., Lin et al. and Mizokawa et al. teach the limitations of claim 42 as above, they do not teach a commutation position sensor. Studer US 4,841,204 teaches a rotational motor with a commutation sensor for sensing the relative position of the rotor relative to a fixed stator in an electrical drive. It would have been obvious to one of ordinary skill in the art, at the time of invention to provide the device taught by Bonora et al., Lin et al. and Mizokawa et al. with a position sensor as taught by Studer in order to determine the position of a drive motor without requiring a separate sensing device by using a well known commutation sensor.

Regarding claim 47 It would have been obvious to one of ordinary skill in the art, at the time of invention to run the conveyors at any desired speed relative to one another as desired.

Claims 2-10 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonora et al., Lin et al. and Mizokawa et al. as applied to claim 1 above, and further in view of Belna. Regarding claims 2-10 and 12 Bonora et al., Lin et al. and Mizokawa et al. teach the limitations of claim 1 as above, they do not teach the drive means for the second conveyor as being a linear drive. Belna US 4,624,617 teaches a transport system for wafers comprising:

a first tracked section (10) for moving wafers therealong;

said tracked section serving a plurality of process devices for processing wafers;

said track comprising:

a rail (28) for guiding a wafer carrier (20) therealong;

said carrier being driven by a solid state brushless linear motor comprising:

a drive coil (40) mounted to said track;

at least one permanent magnet (42) conventionally mounted to said wafer carrier;

such that energizing said coil will move said carrier bidirectionally along said track. It would have been obvious to one of ordinary skill in the art, at the time of invention to provide the device taught by Bonora et al. with a linear drive as taught by Belna in order to move the carrier while at the same time limiting the amount of wear debris generated thereby making it easier to maintain the cleanliness standards of the fabrication facility at acceptable levels.

Regarding claims 13 and 14 Bonora et al. further teaches moving the wafer carrier bidirectionally along the track along at least two different axes which are crosswise to one another. See figure 2.

Claims 28-32, 45 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonora et al. in view of Belna. Regarding claims 28,29,31,32,45 and 46 Bonora et al. teaches at least one processing tool for processing semiconductor wafers;

a container (8) for holding at least one wafer therein for transport to and from the processing tool;

said container comprising a frame for securing the wafer therein and engagement surfaces for allowing the container to be captured and carried by another transport vehicle;

a transport section (10) for connecting the processing tool with other devices within a fabrication facility;

the transport section is not vehicle based and has tracks (12,14) which directly interface with the container for movably supporting the container, and allowing the container to move relative to the various devices in the facility;

wherein the tracks have a motor (48) therein for aligning the container with various track sections and devices in the facility;

said tracks further defined by a horizontal plane having two axes one of which is oriented along the direction of travel and the other defining a width of the tracks.

Bonora does not teach a portion of the motor being mounted on the container.

Belna teaches a transport system for wafers comprising:

a first tracked section (10) for moving wafers therealong;

said tracked section serving a plurality of process devices for processing wafers;

said track comprising:

a rail (28) for guiding a wafer carrier (20) therealong;

said carrier being driven by a solid state brushless linear motor comprising:

a drive coil (40) mounted to said track;
at least one permanent magnet (42) conventionally mounted to said wafer carrier;

such that energizing said coil will move said carrier bidirectionally along said track;

wherein the portions of the motor mounted on the carrier defines a multi-axis drive motor;

wherein when the container is lifted from the track a corresponding portion of the motor goes along with it, thereby disconnecting it from the track mounted portion of the motor. It would have been obvious to one of ordinary skill in the art, at the time of invention to provide the device taught by Bonora et al. with a linear drive as taught by Belna in order to move the carrier while at the same time limiting the amount of wear debris generated thereby making it easier to maintain the cleanliness standards of the fabrication facility at acceptable levels.

In regards to claims 26 and 30 the portion of the container taught by Bonora that reacts to the drive wheels is adapted to move the container along at least two crosswise axes.

Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bonora et al. and Belna as applied to claim 28 above, and further in view of Lin et al. Bonora et al. and Belna teach the limitations of claim 28 above, they do not teach using a separate conveying system. Lin et al. teaches a wafer processing facility comprising:

at least two stocking devices (30) each with an input/output of port;
a first overhead transport system for moving wafer containers (44) about the facility;

a second transport system (52) for moving containers between the stockers;
wherein said first transport system comprises a vehicle (36) that runs along a first track system (38);

wherein the second transport system has a means for aligning a container held by either transport system with the opposing transport system;

wherein the two transport sections are parallel at portions of their runs. It would have been obvious to one of ordinary skill in the art, at the time of invention to provide the device taught by Bonora et al. and Belna with a secondary transport system as taught by Lin et al. in order to alleviate bottlenecks in the delivery system without having to resort to a series of expensive stockers.

Claims 21 -26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Belna in view of Hazelton et al. Regarding claims 21-26, Belna teaches a transport system for wafers comprising:

a first tracked section (10) for moving wafers therealong;
said tracked section serving a plurality of process devices for processing wafers;
said track comprising:
a rail (28) for guiding a wafer carrier (20) therealong;
said carrier for a wafer being driven by a solid state brushless linear motor comprising:

a drive coil (40) mounted to said track;
at least one permanent magnet (42) conventionally mounted to said wafer carrier;

such that energizing said coil will move said carrier bidirectionally along said track;

wherein the portions of the motor mounted on the carrier defines a multi-axis drive motor;

wherein when the container is lifted from the track a corresponding portion of the motor goes along with it, thereby disconnecting it from the track mounted portion of the motor. Belna does not teach moving the carrier along two distinct axes without reorienting the carrier. Hazelton et al. US 6,208,045 teaches a system for moving wafers comprising:

a carrier for holding a wafer to be moved;

said carrier magnetically held above a track;

an electrically activated magnetic drive interacting between the carrier and the track which allows the carrier to be moved horizontally in both the x axis and the y axis without requiring that the carrier be reoriented when transitioning movement from one axis to another. It would have been obvious to one of ordinary skill in the art, at the time of invention to provide the device taught by Belna with a track and carrier system as taught by Hazelton et al. in order to allow the carrier to move without needing physical guide along the track thereby preventing the generation of debris

along the tracked section as well as providing for more accurate movement of the carrier.

Claims 27 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Belna and Hazelton et al. as applied to claim 21 above, and further in view of Lin et al. Belna and Hazelton et al. teach the limitations of claim 21 above, they do not teach using a separate conveying system. Lin et al. teaches a wafer processing facility comprising:

- at least two stocking devices (30) each with an input/output of port;

- a first overhead transport system for moving wafer containers (44) about the facility;

- a second transport system (52) for moving containers between the stockers;

- wherein said first transport system comprises a vehicle (36) that runs along a first track system (38);

- wherein the second transport system has a means for aligning a container held by either transport system with the opposing transport system;

- wherein the two transport sections are parallel at portions of their runs. It would have been obvious to one of ordinary skill in the art, at the time of invention to provide the device taught by Belna with a secondary transport system as taught by Lin et al. in order to alleviate bottlenecks in the delivery system without having to resort to a series of expensive stockers.

Response to Amendment

The amendments to the claims filed on December 31, 2009 have been entered into the record.

Allowable Subject Matter

Claim 11 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The closest prior art of Belna does not teach or suggest placing crosswise magnets on the carrier such that the carrier may be moved along two different axes.

Response to Arguments

Applicant's arguments filed December 31, 2009 have been fully considered but they are not persuasive. Regarding the 35 USC 112 rejection of claim 47 the applicant argues that the configuration of the system is definite. In the cited section of the specification on page 10 the second transport system is "a conveyor based or a high speed system (relative to a vehicle based system)". This leads one to believe that the conveyor system disclosed does not travel faster than the vehicle based system, but that the high speed system is the one being set forth by the claim. However the cited passages from the specification do not set forth what is a high speed configuration relative to the conveyor configuration. As such it is unclear what additional configuration is used to modify the system of claim 1. The rejection is held to be valid and is made final.

Regarding the rejection of claim 44 the examiner notes that the Bonora et al. reference shows the different sections of track having turntables between them at

junctions where the cassette is to be tuned. Each section of track between these junction is modular as the reference teaches they can be configured as needed. How they are made is not of consequence to this claim as it is not directed to a method of manufacturing the track section, just their physical structure. As such Bonora et al. disclose discrete track section that when placed together in various configuration make up an overall system wherein some of the parts of each track section are integral to the track section.

Regarding the rejection of claim 1 the applicant is relying on the function of the device for patentability. In this case the Bonora et al. reference meets the functional requirement of a carrier being stopped at a random location along a track. The Lin et al. reference teaches two parallel and spaced apart conveying system wherein a wafer carrier can be transferred between the systems at various points. Once the random point is determined the wafer carrier will be stopped at that point and the transfer will take place without moving either transport. This is all that is required from the claim language. As such the claims are hereby finally rejected.

Applicant's arguments with respect to the remainder of the claims have been considered but are moot in view of the new ground(s) of rejection.

The prior art made of record and not relied upon, but considered pertinent to applicant's disclosure are listed on the attached PTO-892.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles A. Fox whose telephone number is 571-272-6923. The examiner can normally be reached on 7:00-4:00 Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Saul Rodriguez can be reached on 571-272-7097. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Charles A. Fox/
Primary Examiner, Art Unit 3652